

What is claimed is:

1. A VSB receiver comprising:

an intermediate frequency signal generator generating an intermediate frequency band signal from a received signal;

5 a demodulator generating a complex base band signal consisting of an I channel signal and a Q channel signal using the intermediate frequency band signal and at least one local carrier wave signal; and

10 a complex base band matched filter filtering at least one of the I channel signal and the Q channel signal.

15 2. The VSB receiver of claim 1, wherein the complex base band matched filter includes a first base band matched filter filtering a real domain of the I channel signal, a second base band matched filter filtering an imaginary domain of the I channel signal, a third base band matched filter filtering a real domain of the Q channel signal, a fourth base band matched filter filtering an imaginary domain of the Q channel signal, a first adder adding the filtered real domain signals of the I channel and the Q channel output from the first base band matched filter and the second base band matched filter to output the resultant value as a new I channel signal, and a second adder adding the filtered imaginary domain signals of the I channel and the Q channel output from the second base band matched filter and the

fourth base band matched filter to output the resultant value as a new Q channel signal.

3. The VSB receiver of claim 1, wherein the complex base
5 band matched filter is designed so that a frequency characteristic $H(w)$ is identical to a frequency spectrum $R(w)$ of the base band signal.

4. The VSB receiver of claim 1, wherein the complex base
band matched filter includes a fifth base band matched filter
filtering the I channel signal, a sixth base band matched filter
filtering the Q channel signal, and a third adder adding the
filtered I channel signal to the real domain and the filtered Q
channel signal to the imaginary domain to output the added
15 complex signal as a new I channel signal.

5. A VSB receiver comprising:

a first multiplier multiplying a receiving signal by an
intermediate frequency signal to generate an intermediate
20 frequency band signal;

a second multiplier multiplying the intermediate frequency
band signal by a first local carrier wave signal to demodulate
the intermediate frequency band signal to an I channel signal;

a third multiplier multiplying the intermediate frequency band signal by a second local carrier wave signal to demodulate the intermediate frequency band signal to a Q channel signal; and

a complex base band matched filter filtering at least one of the demodulated I channel signal and the demodulated Q channel to output a complex signal.

6. The VSB receiver of claim 5, wherein the complex base band matched filter is designed so that a frequency characteristic $H(w)$ is identical to a frequency spectrum $R(w)$ of the base band signal.

7. The VSB receiver of claim 5, wherein the complex base band matched filter includes a first base band matched filter filtering a real domain of the I channel signal, a second base band matched filter filtering an imaginary domain of the I channel signal, a third base band matched filter filtering a real domain of the Q channel signal, a fourth base band matched filter filtering an imaginary domain of the Q channel signal, a first adder adding the filtered real domain signals of the I channel and the Q channel output from the first base band matched filter and the second base band matched filter to output the resultant value as a new I channel signal, and a second adder adding the filtered imaginary domain signals of the I channel and the Q

channel output from the second base band matched filter and the fourth base band matched filter to output the resultant value as a new Q channel signal.

5 8. The VSB receiver of claim 5, wherein the complex base band matched filter includes a fifth base band matched filter filtering the I channel signal, a sixth base band matched filter filtering the Q channel signal, and a third adder adding the filtered I channel signal to the real domain and the filtered Q channel signal to the imaginary domain to output the added complex signal as a new I channel signal.

10 9. The VSB receiver of claim 5, wherein the intermediate frequency signal is $2\cos(wc-wi)t$.

15 10. The VSB receiver of claim 5, wherein the first local carrier wave is $2\cos w_i t$, and the second local carrier wave is $2\sin w_i t$.

20 11. A method for processing a signal in a VSB receiver having a tuner, the method comprising the steps of:

generating an intermediate frequency band signal by multiplying a received signal through the tuner by an intermediate frequency signal;

generating a complex base band signal consisting of an I channel signal and a Q channel signal by multiplying the intermediate frequency band signal by an I channel local carrier wave signal and a Q channel local carrier wave signal; and

5 complex matched filtering at least one of the I channel signal and the Q channel signal.

12. The method of claim 11, wherein the intermediate frequency signal is $2\cos(\omega_c - \omega_i)t$.

13. The method of claim 11, wherein the first local carrier wave is $2\cos\omega_1 t$, and the second local carrier wave is $2\sin\omega_1 t$.